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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,601	03/23/2001	Masaki Ueno	73600.P029	6171

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EXAMINER

FALASCO, LOUIS V

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

0012

**Office Action Summary**

Application No.

09/816,601

Applicant(s)

UENO ET AL.

Examiner

Louis Falasco

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.                      6) ☐ Other: \_\_\_\_\_

PAPERS RECEIVED

Applicants' amendment received 10/08/03 is acknowledged as paper 10.

CLAIMS

Claims under consideration are 1 - 9, 11 and 21 to 25.

The election of the previous Office action is acknowledged as having been made without traverse.

ACTIONS

Statutory basis

*The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.*

Rejections

Applicant's arguments filed 10/08/03 have been fully considered but they are moot in view of the new ground of rejection in this action.

Claims 1, 3 - 9, 11, 21, 24 and 25 are rejected under 35 USC 103 over **Fluke et al** (US 6313973 copy submitted by applicants) or **Gill** (US 6271997 copy submitted by applicants) either one taken with either **Kawawake et al** (US 2001/0046110) or **Sakakima et al** (US 6567246).

**Fluke et al** or **Gill** teach the basic requirements of the spin valve of the claims including a spin-valve type magnetoresistance sensor with a free ferromagnetic layer; a pinned ferromagnetic layer; a non-magnetic spacer layer which is sandwiched between the free ferromagnetic layer and the pinned ferromagnetic layer; an anti-ferromagnetic layer which is disposed adjacent to the pinned ferromagnetic layer; a non-magnetic back layer which is disposed adjacent to the free ferromagnetic layer and which is stacked on the opposite side of the free ferromagnetic layer from the non-magnetic spacer layer – see Fig. 6 and 7 and Cu layer 6 of **Fluke et al** or see Fig 12 and Cu layer 210 of **Gill**. Neither **Fluke et al** nor **Gill** teach a reflective layer or a reflective layer of a metallic oxide. However either of **Kawawake et al** and **Sakakima et al** teach the inclusion of an electron-reflective layer which is disposed adjacent to the back layer stacked on an opposed side from the free ferromagnetic layer see layer 9-1 in Fig 5 of **Kawawake et al** or see reflective layer 6 in Fig 2 of **Sakakima et al**. As to the limitation of an oxide **Kawawake et al** [paragraph 00116] and **Sakakima et al** (film 6 in Fig. 2 col. 9 lns 9 and 32) both suggest an oxide layer over the reflective layer, and so are considered part of the reflective layer.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to adopt the reflective layer with oxide such as shown by **Kawawake et al** or **Sakakima et al** in spin-valve type magnetoresistance sensors of the **Fluke et al** or **Gill** primary references for the purpose of increasing efficiency of the spin-valve and have an oxide to provide increase wear protection. One skilled in the art

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would have been motivated to adopt **Sakakima et al** and **Kawawake et al** with the expectation of protecting the element with the oxide layer and further increasing the density and responsiveness of the recording media as evident from the MR ratio increase of the spin-valve (col. 9 ln 13 of **Sakakima et al** and last sentence of paragraph [00116] of **Kawawake et al**).

Claims 2, 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2, 22 and 23 specifically call for tantalum oxide film and there is no suggestion of adopting a tantalum oxide layer in place to be a reflective layer.

**Kamiguchi et al** (US 6348274) is cited as an example of tantalum oxide film formed on tantalum however the **Kamiguchi et al** structure tantalum oxide layer could not, in the view of the examiner, would not be obvious to adapt as a reflective layer nor using the teachings of **Kamiguchi et al** result in a successful electron reflection layer since the only suggestion is for placement as a protective layer on the exterior of the element, further more no suggestion was found in the cited art to use a tantalum film with tantalum oxide as a metallic and metallic oxide layer for the reflective layer in the art.

CONCLUSION

The claims are 1 - 9, 11 and 21 to 25.


- Claims 1, 3 - 9, 11, 21, 24 and 25 have been rejected.
- Claims 2, 22 and 23 have been objected to as dependent on rejected claims
- Information Disclosure Statement has been received.

INQUIRES

Any inquiry concerning this communication from the examiner should be directed to examiner Louis Falasco whose telephone number is (703)305-6974 or (571)272-1507. The examiner can normally be reached M-F 9:30 AM - 6:00 PM.

- If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Paul Thibodeau may be reached at (703)308-2367 or (571)272-1516.
- The Fax phone numbers for the organization where this application or proceeding is assigned are: 703.872-9310 for regular communications and 703.872-9311 for After Final communications.
- An inquiry of a general nature or relating to status of this application or proceeding should be directed to the TC 1700 receptionist whose telephone number is 703.308-0651.

LF  
12/03

  
**STEVAN A. RESAN**  
**PRIMARY EXAMINER**